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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/823,474	04/13/2004	Masamichi Saito	9281-4798	4590
7590 Brinks Hofer Gilson & Lione P.O. Box 10395 Chicago, IL 60610			EXAMINER RENNER, CRAIG A	
			ART UNIT 2627	PAPER NUMBER
SHORTENED STATUTORY PERIOD OF RESPONSE 3 MONTHS			MAIL DATE 02/21/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/823,474

Applicant(s)

SAITO ET AL.

Examiner

Craig A. Renner

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 November 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) 4-6 and 12-14 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 7-11, 15 and 16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 April 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>4/13/04, 8/18/04, 9/17/04 & 5/1/06</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election of "Species I, which correspond to at least claims 1-3, 7-11, 15, and 16" in the reply filed on 29 November 2006 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)). Accordingly, claims 4-6 and 12-14 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to one or more non-elected inventions/species, there being no allowable generic or linking claim.

Priority

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

3. The information disclosure statement filed 01 May 2006 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each cited foreign patent document; each non-patent literature publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. Note that a copy of the document listed as item **C7** cannot be found in the record. The information disclosure statement has been placed in the application file, but the information pertaining to the

document listed as item **C7** referred to therein has not been considered. Additionally, note that the documents listed as items **C1** and **C2** were also lined through as these items duplicate items **A2** and **A3**, respectively, in the information disclosure statement filed 13 April 2004.

Drawings

4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include one or more reference signs not mentioned in the description. Note, for instance "133a" (shown in FIG. 21), "133b" (shown in FIG. 21), and "133c" (shown in FIG. 21).

Corrected drawing sheets in compliance with 37 CFR 1.121(d) and/or an amendment to the specification in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

5. The disclosure is objected to because of the following informalities:
- a. In line 4 in claim 2, --is-- should be inserted after "the pinned magnetic layer" for better clarity.
 - b. In line 8 in each of claims 3 and 11, "Co2MnY" should be changed to --Co₂MnY-- in order to be consistent with the remainder of the disclosure.

Appropriate correction is required.

6. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 3 and 11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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a. In line 5 of claim 3, it is indefinite as to whether "the pinned magnetic layer" refers to that set forth in line 6 of independent claim 1, or one of those set forth in line 3 of claim 3.

b. In line 5 of claim 11, it is indefinite as to whether "the pinned magnetic layer" refers to that set forth in line 6 of independent claim 9, that set forth in line 3 of claim 11, or that set forth in lines 3-4 of claim 11.

Double Patenting

9. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

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10. Claims 1-3, 7-11 and 15-16 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-13 of copending Application No. 10/823,473. Although the conflicting claims are not identical, they are not patentably distinct from each other because the only difference between the patented and present claims is that the present claims do not call for an "antiferromagnetic layer."

Official notice is taken of the fact that it is notoriously old and well known in the art to omit one or more elements and their functions in a combination where the remaining elements perform the same functions as before. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to have not claimed an antiferromagnetic layer in copending Application No. 10/823,473. The rationale is as follows:

One of ordinary skill in the art would have been motivated to have not claimed an antiferromagnetic layer in copending Application No. 10/823,473 since it is notoriously old and well known in the art to omit one or more elements and their function in a combination where the remaining elements perform the same functions as before, and since it has been held that omission of an element and its function in a combination where the remaining elements perform the same functions as before involves only routine skill in the art, *In re Karlson*, 136 USPQ 184 (CCPA 1963).

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

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11. Claims 1-3, 7-11 and 15-16 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over allowed claims 1, 4-16 and 47-72 of copending Application No. 10/823,484. Although the conflicting claims are not identical, they are not patentably distinct from each other because the only difference between the patented and present claims is that the present claims do not call for an "antiferromagnetic layer."

Official notice is taken of the fact that it is notoriously old and well known in the art to omit one or more elements and their functions in a combination where the remaining elements perform the same functions as before. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to have not claimed an antiferromagnetic layer in copending Application No. 10/823,484. The rationale is as follows:

One of ordinary skill in the art would have been motivated to have not claimed an antiferromagnetic layer in copending Application No. 10/823,484 since it is notoriously old and well known in the art to omit one or more elements and their function in a combination where the remaining elements perform the same functions as before, and since it has been held that omission of an element and its function in a combination where the remaining elements perform the same functions as before involves only routine skill in the art, *In re Karlson*, 136 USPQ 184 (CCPA 1963).

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 102

12. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

13. Claims 1, 2, 7, 9, 10 and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Nakatani et al. (US 5,390,061).

Nakatani teaches a CPP giant magnetoresistive head comprising lower and upper shield layers (15 and 16, for instance) with a predetermined shield distance therebetween (as shown in FIG. 10, for instance); and a giant magnetoresistive element disposed between the upper and lower shield layers (as shown in FIG. 10, for instance) and comprising a pinned magnetic layer (2, see lines 13-16 in column 9, for instance, i.e., the larger coercive force of layer 2 results in layer 2 being pinned to at least some extent), a free magnetic layer (4) and a nonmagnetic layer (3) disposed between the pinned magnetic layer and the free magnetic layer (as shown in FIG. 1, for instance), a current flowing perpendicularly to a film plane of the giant magnetoresistive element (as shown in FIG. 1, for instance, i.e., due to the electrode arrangement), wherein the

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pinned magnetic layer extends to a rear of the nonmagnetic layer and the free magnetic layer in a height direction (as shown in FIG. 1, for instance), and a dimension of the pinned magnetic layer in a height direction is larger than that in a track width direction (as shown in FIG. 1, for instance) [as per claim 1]; wherein the pinned magnetic layer comprises a magnetic material having a positive magnetostriction constant or a magnetic material having high coercive force (lines 13-16 in column 9, for instance, i.e., a magnetic material having high coercive force), and an end of the pinned magnetic layer exposed at a surface facing a recording medium (as shown in FIG. 1, for instance) [as per claims 2, 9 and 10]; and wherein the head further comprises large-area nonmagnetic metal films (1 and 6) provided between the giant magnetoresistive element and the lower shield layer and between the giant magnetoresistive element and the upper shield layer, respectively (as shown in FIG. 1 relative to FIG. 10, for instance), so that the large-area nonmagnetic metal films are in direct contact with the pinned magnetic layer and the free magnetic layer (as shown in FIG. 1, for instance) and have larger areas than those of the pinned magnetic layer and the free magnetic layer, respectively (as shown in FIG. 1, for instance) [as per claims 7 and 15].

14. Claim 9 is rejected under 35 U.S.C. 102(b) as being anticipated by Dill et al. (US 5,898,548).

Dill teaches a CPP giant magnetoresistive head comprising lower and upper shield layers (S1 and S2) with a predetermined shield distance (S) therebetween (as shown in FIG. 4B, for instance); and a giant magnetoresistive element disposed

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between the upper and lower shield layers (as shown in FIG. 4B, for instance) and comprising a pinned magnetic layer (118), a free magnetic layer (132) and a nonmagnetic layer (120) disposed between the pinned magnetic layer and the free magnetic layer (as shown in FIG. 4B, for instance), a current (I) flowing perpendicularly to a film plane of the giant magnetoresistive element (as shown in FIG. 4A, for instance); wherein the pinned magnetic layer comprises a magnetic material having a positive magnetostriction constant or a magnetic material having high coercive force (lines 1-3 in column 8, for instance, i.e., a magnetic material having high coercive force), and an end of the pinned magnetic layer is exposed at a surface facing a recording medium (as shown in FIG. 4B, for instance).

15. Claims 9 and 11 are rejected under 35 U.S.C. 102(a) and/or 35 U.S.C. 102(e) as being anticipated by Saito (US 2003/0103299).

Saito teaches a CPP giant magnetoresistive head comprising lower and upper shield layers (20 and 31) with a predetermined shield distance therebetween (as shown in FIG. 8, for instance); and a giant magnetoresistive element disposed between the upper and lower shield layers (as shown in FIG. 8, for instance) and comprising a pinned magnetic layer (42/28a/28b/28c), a free magnetic layer (26a/26b/41) and a nonmagnetic layer (27) disposed between the pinned magnetic layer and the free magnetic layer, a current flowing perpendicularly to a film plane of the giant magnetoresistive element (paragraph [0057] on page 4, for instance); wherein the pinned magnetic layer comprises a magnetic material having a positive magnetostriction

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constant or a magnetic material having high coercive force (paragraph [0263] on page 16, for instance, i.e., each of "Co₂MnSi, Co₂MnGe, Co₂MnSn, [and] Co₂MnAl," for instance, is a magnetic material having a positive magnetostriction constant or a magnetic material having high coercive force), and an end of the pinned magnetic layer is exposed at a surface facing a recording medium (as shown in FIG. 8, for instance) [as per claim 9]; wherein the pinned magnetic layer has a laminated ferrimagnetic structure comprising a first pinned magnetic layer (42/28a) and a second pinned magnetic layer (28c) which are laminated with a nonmagnetic intermediate layer (28b) disposed therebetween (as shown in FIG. 8, for instance), and the pinned magnetic layer partially or entirely comprises Fe-Co-Cu (wherein Fe > 10 atomic percent, Co > 30 atomic percent, and Cu > 5 atomic percent), Fe-Co-Cu-X (wherein X is at least one element of Pt, Pd, Mn, Si, Au, and Ag), or Co₂MnY (wherein Y is at least one element of Ge, Si, Sn, and Al) (paragraph [0263] on page 16, for instance, i.e. Co₂MnY (wherein Y is at least one element of Ge, Si, Sn, and Al), for instance) [as per claim 11].

16. Claim 1 is rejected under 35 U.S.C. 102(e) as being anticipated by Carey et al. (US 6,757,144).

Carey teaches a CPP giant magnetoresistive head comprising lower and upper shield layers (302 and 346) with a predetermined shield distance therebetween (as shown in FIG. 32, for instance); and a giant magnetoresistive element disposed between the upper and lower shield layers (as shown in FIG. 32, for instance) and comprising a pinned magnetic layer (330), a free magnetic layer (326) and a

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nonmagnetic layer (328) disposed between the pinned magnetic layer and the free magnetic layer (as shown in FIG. 32, for instance), a current flowing perpendicularly to a film plane of the giant magnetoresistive element (lines 54-56 in column 8, for instance), wherein the pinned magnetic layer extends to a rear of the nonmagnetic layer and the free magnetic layer in a height direction (as shown in FIG. 32, for instance), and a dimension of the pinned magnetic layer in a height direction is larger than that in a track width direction (as shown in FIG. 31, for instance).

Claim Rejections - 35 USC § 103

17. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

18. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

19. Claims 3, 8, 11 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakatani et al. (US 5,390,061).

Nakatani teaches the head as detailed in paragraph 13, supra. Nakatani, however, remains silent as to the pinned magnetic layer having a "laminated ferrimagnetic structure comprising a first pinned magnetic layer and a second pinned magnetic layer which are laminated with a nonmagnetic intermediate layer disposed therebetween, and the pinned magnetic layer partially or entirely comprises Fe-Co-Cu (wherein Fe > 10 atomic percent, Co > 30 atomic percent, and Cu > 5 atomic percent), Fe-Co-Cu-X (wherein X is at least one element of Pt, Pd, Mn, Si, Au, and Ag), or Co₂MnY (wherein Y is at least one element of Ge, Si, Sn, and Al)" as per claims 3 and 11, and as to the large-area nonmagnetic metal film disposed between the giant magnetoresistive element and the lower shield layer comprising "any one of Ta/Cu, Ta/Ru/Cu, Ta/Cr, Ta/Ni-Cr, Ta/(Ni-Fe)-Cr, and Cr, and when the composition contains Cr, the Cr content exceeds 20 atomic percent" as per claims 8 and 16.

Nakatani does, however, teach that the large-area nonmagnetic metal film disposed between the giant magnetoresistive element and the lower shield layer is an electrode. Official notice is taken of the fact that a laminated ferrimagnetic structure comprising a first pinned magnetic layer and a second pinned magnetic layer which are laminated with a nonmagnetic intermediate layer disposed therebetween is a notoriously old and well known pinned magnetic layer configuration in the art. Official notice is also taken of the fact that at least one of Fe-Co-Cu (wherein Fe > 10 atomic percent, Co > 30 atomic percent, and Cu > 5 atomic percent), Fe-Co-Cu-X (wherein X is

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at least one element of Pt, Pd, Mn, Si, Au, and Ag), and Co_2MnY (wherein Y is at least one element of Ge, Si, Sn, and Al) is a notoriously old and well known pinned magnetic layer material in the art. Official notice is lastly taken of the fact that at least one of Ta/Cu, Ta/Ru/Cu, Ta/Cr(>20 at%), Ta/Ni-Cr(>20 at%), Ta/(Ni-Fe)-Cr(>20 at%), and Cr is a notoriously old and well known electrode material in the art. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to have had the pinned magnetic layer of Nakatani have a laminated ferrimagnetic structure comprising a first pinned magnetic layer and a second pinned magnetic layer which are laminated with a nonmagnetic intermediate layer disposed therebetween, and the pinned magnetic layer of Nakatani partially or entirely comprise Fe-Co-Cu (wherein Fe > 10 atomic percent, Co > 30 atomic percent, and Cu > 5 atomic percent), Fe-Co-Cu-X (wherein X is at least one element of Pt, Pd, Mn, Si, Au, and Ag), or Co_2MnY (wherein Y is at least one element of Ge, Si, Sn, and Al), and the large-area nonmagnetic metal film disposed between the giant magnetoresistive element and the lower shield layer of Nakatani comprise any one of Ta/Cu, Ta/Ru/Cu, Ta/Cr, Ta/Ni-Cr, Ta/(Ni-Fe)-Cr, and Cr, and when the composition contains Cr, the Cr content exceeds 20 atomic percent. The rationale is as follows:

One of ordinary skill in the art would have been motivated to have had the pinned magnetic layer of Nakatani have a laminated ferrimagnetic structure comprising a first pinned magnetic layer and a second pinned magnetic layer which are laminated with a nonmagnetic intermediate layer disposed therebetween since such is a notoriously old and well known pinned magnetic layer configuration in the art, and since selecting a

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known pinned magnetic layer configuration on the basis of its suitability for the intended use is considered to be within the level of ordinary skill in the art.

One of ordinary skill in the art would have been motivated to have had the pinned magnetic layer of Nakatani partially or entirely comprise Fe-Co-Cu (wherein Fe > 10 atomic percent, Co > 30 atomic percent, and Cu > 5 atomic percent), Fe-Co-Cu-X (wherein X is at least one element of Pt, Pd, Mn, Si, Au, and Ag), or Co₂MnY (wherein Y is at least one element of Ge, Si, Sn, and Al) since at least one of Fe-Co-Cu (wherein Fe > 10 atomic percent, Co > 30 atomic percent, and Cu > 5 atomic percent), Fe-Co-Cu-X (wherein X is at least one element of Pt, Pd, Mn, Si, Au, and Ag), and Co₂MnY (wherein Y is at least one element of Ge, Si, Sn, and Al) is a notoriously old and well known pinned magnetic layer material in the art, and since selecting a known material on the basis of its suitability for the intended use is within the level of ordinary skill in the art, *In re Leshin*, 125 USPQ 416 (CCPA 1960).

One of ordinary skill in the art would have been motivated to have had the large-area nonmagnetic metal film disposed between the giant magnetoresistive element and the lower shield layer of Nakatani comprise any one of Ta/Cu, Ta/Ru/Cu, Ta/Cr, Ta/Ni-Cr, Ta/(Ni-Fe)-Cr, and Cr, and when the composition contains Cr, the Cr content exceeds 20 atomic percent since Nakatani teaches that the large-area nonmagnetic metal film disposed between the giant magnetoresistive element and the lower shield layer is an electrode and at least one of Ta/Cu, Ta/Ru/Cu, Ta/Cr(>20 at%), Ta/Ni-Cr(>20 at%), Ta/(Ni-Fe)-Cr(>20 at%), and Cr is a notoriously old and well known electrode material in the art, and since selecting a known material on the basis of its

suitability for the intended use is within the level of ordinary skill in the art. See *In re Leshin*, supra.

Pertinent Prior Art

20. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. This includes Hayashi et al. (US 6,452,342), which appears to teach a CPP GMR with a pinned layer height larger than a pinned layer width in the embodiments shown in FIGS. 10-11 and 19-20; and Gill (US 7,092,221), which appears to teach a CPP GMR with a pinned layer height larger than a pinned layer width.

Pertinent Art


21. The art made of record and not relied upon is considered pertinent to applicant's disclosure. This includes Saito (US 2004/0207959), which is the Patent Application Publication of Application No. 10/823,473, which is relied upon in the obviousness-type double patenting rejection in paragraph 10, supra; and Saito et al. (US 2004/0207962), which is the Patent Application Publication of Application No. 10/823,484, which is relied upon in the obviousness-type double patenting rejection in paragraph 11, supra.

Conclusion

22. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Craig A. Renner whose telephone number is (571) 272-7580. The examiner can normally be reached on Tuesday-Friday 9:00 AM - 7:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa T. Nguyen can be reached on (571) 272-7579. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


Craig A. Renner
Primary Examiner
Art Unit 2627

CAR